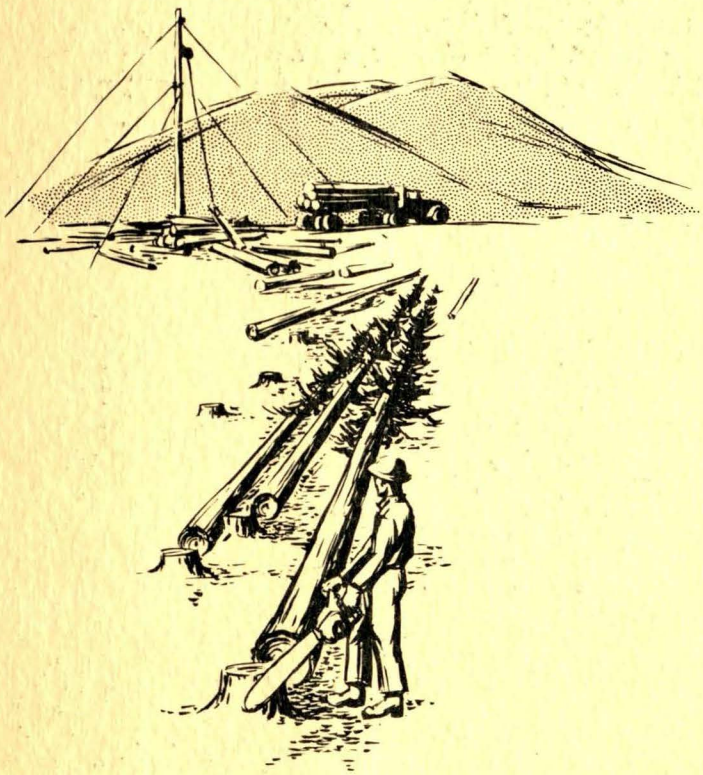
STATION LIBRARY COPY

FILE

ANNUAL CUT and TIMBER PRODUCTS OUTPUT *in the* PACIFIC NORTHWEST IN 1952

FOREST SURVEY REPORT NO. 126



PACIFIC NORTHWEST FOREST & RANGE EXPERIMENT STATION
R. W. COWLIN, DIRECTOR
U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

PORTLAND, OREGON

SEPTEMBER 1956

ANNUAL CUT AND TIMBER PRODUCTS OUTPUT

IN THE

PACIFIC NORTHWEST IN 1952

by

D. R. Gedney
Division of Forest Economics Research

U. S. Department of Agriculture Forest Service
Pacific Northwest Forest and Range Experiment Station

R. W. Cowlin, Director
September 1956

FOREWORD

This publication summarizes the results of a study of timber harvesting operations in the forests of Oregon and Washington in 1952. The study is part of the work of the Forest Survey which is a nationwide project of the Forest Service authorized by the McSweeny-McNary Forest Research Act of 1928 and amended June 25, 1949. The purpose of the Forest Survey is to periodically inventory the extent and condition of forest lands and the timber and other products on them, to ascertain rates of forest growth and depletion, to estimate present consumption of timber products and to analyze and make available in reports survey information needed in the formulation of forest policies and programs.

The Forest Survey is conducted in the various forest regions of the Nation by the regional forest experiment stations of the Forest Service. In the Pacific Northwest region of Oregon and Washington it is an activity of the Pacific Northwest Forest and Range Experiment Station at Portland, Oregon.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
THE ANNUAL CUT	2
Volume	2
Size Class	4
Species	5
OUTPUT OF TIMBER PRODUCTS	5
Raw Material	5
Growing Stock	5
Dead Trees	6
Mill Residue	6
Timber Products	6
Saw Logs	6
Pulpwood	9
Veneer Logs and Bolts	11
Fuelwood	12
Minor Timber Products	13
APPENDIX	14
Statistical Tables	14
Table 1. Annual cut, timber products output, and logging residue from growing stock in Oregon and Washington, 1952	14
Table 2. Annual cut, timber products output, and logging residue from live sawtimber in Oregon and Washington, 1952	15
Table 3. Annual cut of live sawtimber in Oregon by county, 1952	16
Table 4. Annual cut of live sawtimber in Washington by county, 1952	17
Table 5. Annual cut of live sawtimber in Oregon and Washington, by species, 1952	18
Table 6. Consumption of raw material for timber products in Oregon and Washington, by source, 1952	19

Page

Table 7. Consumption of raw material for timber products in Oregon, by source and product, 1952 20

Table 8. Consumption of raw material for timber products in Washington, by source and product, 1952 - 21

Table 9. Log production from live and dead trees in Oregon and Washington, by county, 1952 - - 22

Table 10. Timber products from live sawtimber in the Douglas-fir and ponderosa pine subregions, by species, 1952 - - - - - - - - - - - - - 23

Procedures Used - 24

Log Production - 24

Mill Residues - 24

Timber Products - - - - - - - - - - - - - - - - - - - 25

Annual Cut - 26

Glossary - 27

Annual Cut of Growing Stock - - - - - - - - - - - - - - 27
Annual Cut of Live Sawtimber - - - - - - - - - - - - - 27
Bolt - 27
Commercial Forest Land Area - - - - - - - - - - - - - - 28
Cull Tree - 28
Growing Stock - 28
Live Sawtimber Volume - - - - - - - - - - - - - - - - - 28
Noncommercial Forest Land Area - - - - - - - - - - - - 28
Poletimber Tree - 29
Salvable Dead Tree - - - - - - - - - - - - - - - - - - 29
Sawtimber Tree - 29

INTRODUCTION

The Pacific Northwest[1] contains 40 percent of the sawtimber volume in the Nation and is also rich in other timber resources. Almost 50 percent of all people employed by manufacturing industries in Oregon and Washington are engaged in either logging or processing of timber products. Value of the products from forested lands is measured in hundreds of millions of dollars.

From the above, it is obvious that the overall economy of the region depends to a considerable degree on the use made of the timber resources. To help analyze that use, this paper reports the timber phase of the regional economy in terms of the annual cut, timber products utilized by forest industries, and the amounts and sources of materials required to achieve this production.

The annual cut[2] is the drain on the commercial forest inventory[3] by timber harvest operations. It includes the utilized volume removed from the woods in the form of timber products and the unutilized material cut, knocked down, or killed in logging and left unused in the woods. Although the annual cut is the principal source of raw material for timber products, other sources of raw material not derived from the commercial forest inventory contribute substantially to the total output of timber products. These other sources are principally dead and cull trees, mill residues, and trees on noncommercial forest land.

Timber products included in this report are:

Sawlogs (for lumber, timber, and sawn ties)	Fuelwood
Veneer logs and bolts	Piling
Cooperage logs and bolts	Poles
Shingle logs and bolts	Posts (round, split)
Pulpwood logs and bolts	Round mine timbers
	Miscellaneous

This report is the result of one of a series of periodic studies made by the Forest Service. Some of the more important comprehensive studies covering phases of subject matter similar to that included in this report were made for the period around 1930, and in 1944 and 1948. Some comparisons are made and trends established from these periodic statistics to help provide a basis for estimating future conditions.

1/ As used in this report, includes all of Oregon and Washington. The Douglas-fir subregion includes western Oregon and western Washington; the ponderosa pine subregion includes eastern Oregon and eastern Washington.

2/ Referred to as commodity drain in earlier reports.

3/ Net volume of merchantable live trees of commercial species on commercial forest land.

THE ANNUAL CUT

Usually, any consideration of the timber resource is concerned with the relationship between the volume added to the forest through growth and the volume removed by cutting for timber products. The balance between these two largely determines whether the timber resource is increasing, decreasing, or remaining constant.[4/] Since the annual cut is the volume of live trees removed by cutting for timber products, it provides one of the principal factors necessary to determine change in the volume of the timber resource.

Volume

In 1952, the annual cut of live sawtimber trees in Oregon and Washington totaled 13.2 billion board-feet, Scribner rule.[5/] Annual cut of growing stock, which includes poletimber trees, in addition to sawtimber trees, was approximately 2.4 billion cubic feet. Poletimber trees are 5.0 to 10.9 inches diameter breast high; sawtimber trees are 11.0 inches d.b.h. and larger.

The annual cut (tables 1-4) was distributed between the two States in the ratio of 2.2 to 1, with Oregon cutting almost 70 percent of the total volume. In recent years, the commercial forests of Oregon have been an increasingly important source of supply for the region's timber-product requirements (fig. 1), with the annual cut of sawtimber increasing from 60 percent of the total in 1944 to 64 percent in 1948 and 69 percent in 1952.

Distribution of the total annual cut by subregion did not change materially from 1944 to 1952. In 1944, 82 percent of the cut occurred in the Douglas-fir subregion of western Oregon and western Washington, and 18 percent took place in the ponderosa pine subregion of eastern Oregon and eastern Washington. The corresponding percentages in 1952 were 86 and 14.

The increased market acceptability of lower-grade logs in recent years has made possible greater utilization of the net volume of raw material in the annual timber harvest. This means that less of the annual cut is being left unused in the woods (fig. 1).

4/ Other factors affecting inventory volume but not covered in this report are loss through fire, insects, wind, etc. In some areas these factors may be so large that the cut-growth ratio has little significance in determining trends in growing-stock volume.

5/ All volume statistics in this report are in terms of net volume. All board-foot volumes are log scale, either Scribner rule or International $\frac{1}{4}$-inch rule.

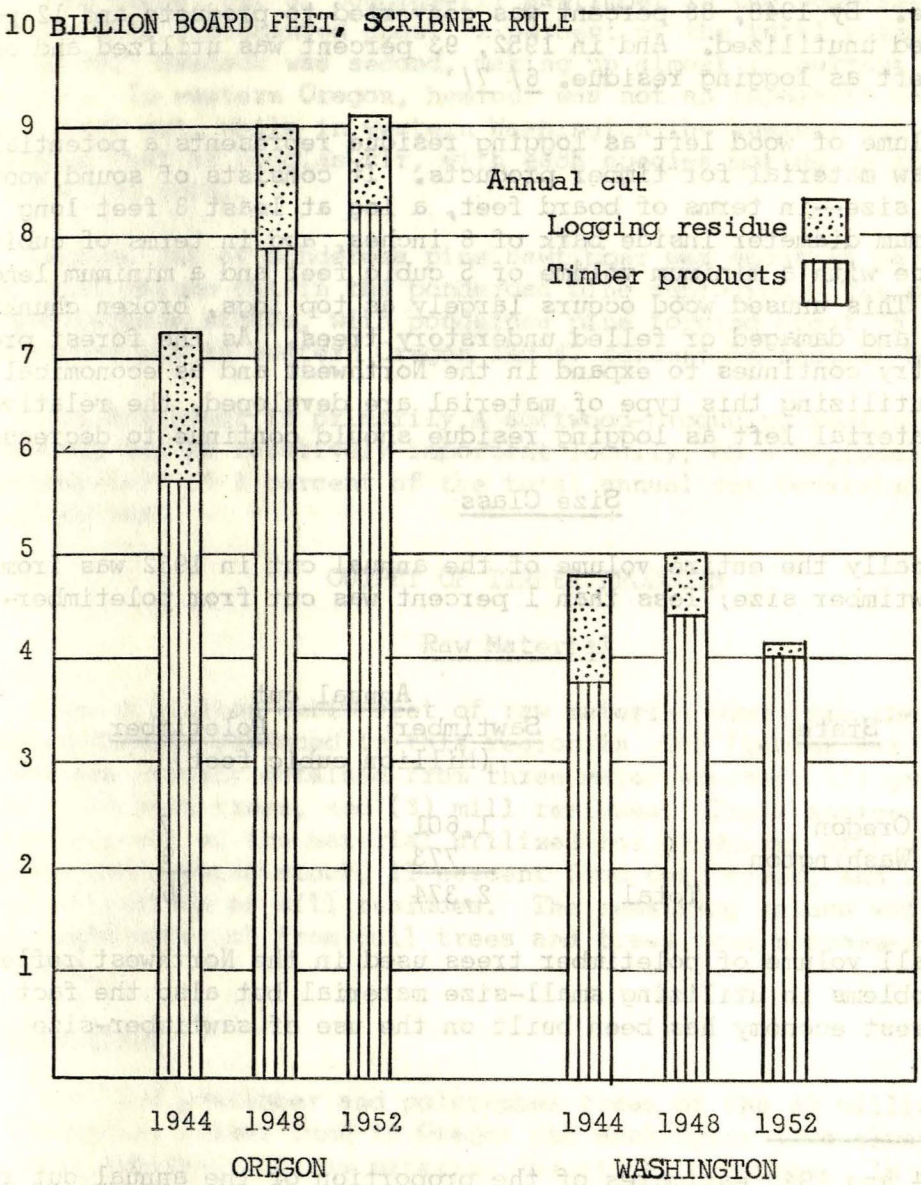


Figure 1.--Annual cut, timber products output & logging residue from live sawtimber in Oregon and Washington 1944, 1948 and 1952

In 1944, 80 percent of the annual cut of sawtimber trees was removed for timber products and 20 percent remained in the woods as logging residue. By 1948, 88 percent was converted to products and 12 percent remained unutilized. And in 1952, 93 percent was utilized and only 7 percent left as logging residue. 6/ 7/

The volume of wood left as logging residue represents a potential source of raw material for timber products. It consists of sound wood of salvable size--in terms of board feet, a log at least 8 feet long with a minimum diameter inside bark of 8 inches, and in terms of cubic feet, a piece with a minimum volume of 5 cubic feet and a minimum length of 4 feet. This unused wood occurs largely as top logs, broken chunks, long butts, and damaged or felled understory trees. As the forest products industry continues to expand in the Northwest and as economical methods of utilizing this type of material are developed, the relative amount of material left as logging residue should continue to decrease.

Size Class

Practically the entire volume of the annual cut in 1952 was from trees of sawtimber size; less than 1 percent was cut from poletimber-size trees:

State	Annual cut	
	Sawtimber	Poletimber
	(Million cubic feet)	
Oregon	1,601	7
Washington	773	9
Total	2,374	16

The small volume of poletimber trees used in the Northwest reflects not only problems in utilizing small-size material but also the fact that the forest economy has been built on the use of sawtimber-size trees.

6/ 1944 and 1948 estimates of the proportion of the annual cut removed for timber products and that remaining as logging residues are based on volumes of material following the initial logging operation. Relogging, which has become fairly common in recent years, removes an additional volume of sound material of salvable size left during initial logging. The 1952 estimate includes volume removed by relogging.

7/ In addition to the logging residue from sound live trees, there is a volume of salvable material from cull and dead trees that is not included.

Species

The annual cut of Douglas-fir sawtimber in the Douglas-fir subregion in 1952 represented about 72 percent of the total volume cut (table 5). Hemlock was second, making up almost 18 percent of the total cut. In western Oregon, hemlock was not an important component of the annual cut, while in western Washington the hemlock cut slightly exceeded that of Douglas-fir, with each species making up about 40 percent of the total.

Annual cut of ponderosa pine sawtimber was about 66 percent of the total volume cut in the ponderosa pine subregion. The proportion varied between states, with ponderosa pine forming about 78 percent of the annual cut in eastern Oregon and 47 percent in eastern Washington.

The Northwest is primarily a softwood-producing region. Although hardwoods may be relatively important locally, on a regional basis less than one-half of 1 percent of the total annual cut consisted of hardwood species.

OUTPUT OF TIMBER PRODUCTS

Raw Material

Over 3 billion cubic feet of raw material went into the various timber products produced in this region in 1952 (tables 6-8). This volume was largely obtained from three major sources: (1) growing stock, (2) dead trees, and (3) mill residues. These sources accounted for 99 percent of the material utilized for products, with 67 percent coming from growing stock, 11 percent from dead trees, and 21 percent from utilization of mill residues. The remaining volume was obtained from sound material from cull trees and trees from noncommercial forest land.

Growing Stock

The live sawtimber and poletimber trees on the 45 million acres of commercial forest land in Oregon and Washington have always been the main reservoir of raw material for timber products. In recent years as increasing amounts of raw material have been obtained from dead trees, residues, and other sources, the relative volume of products coming from the growing stock has been declining. This increase in utilization of dead material and residue volume is not only a conservation measure in itself, but permits the conservation of the growing stock by reducing the annual cut on the commercial timber resources.

Dead Trees

Significant changes have occurred within the last two decades in the sources of raw material utilized for timber products. The substantial portion coming from dead trees is a recent development, occurring mainly within the last ten years.

Prior to the war years, 1942-45, dead timber was rarely salvaged because of abundant green stumpage available at relatively low prices. Of the estimated 10 billion board-feet of commercial timber trees killed in the 1933 Tillamook Burn and salvable, only 5 percent had been logged by the end of 1937. As of 1952, about 5 billion board-feet, or 50 percent of the original estimated volume, had been removed. In the ponderosa pine subregion, the past decade has witnessed the first intensive moves to salvage beetle-killed and other dead timber.

By 1952, high stumpage prices, a tightening timber supply, and concern over all forms of mortality had increased salvage of dead timber to the point where it amounted to 13 percent of the total log production in the two States (table 9). In Tillamook County, salvage of dead timber from the Tillamook Burn amounted to almost three times the volume of live timber cut. In Clallam County, the cut of dead timber--largely killed by the 1951 Forks Fire--was almost half of the volume of live timber cut. In addition to fire-killed timber, there has been widespread salvage in western Oregon and western Washington of dead and down timber resulting from the 1950-52 blowdown and bark-beetle attack.

Mill Residue

Use of mill residue for timber products has played an important part in the region's timber economy for many years. Principal uses have been for pulp and fuel. In 1929, of the estimated 672 million cubic feet of mill residue utilized for products, 93 percent was used for fuel and the remainder mainly for pulpwood. During the past several years, the volume used for pulp has increased and the volume used for fuel has decreased. In 1952, approximately 693 million cubic feet of residues were utilized. Of this total, the proportion used for fuel decreased to 85 percent, with most of the change being an increase in use for pulp.

Timber Products

Saw Logs

A greater volume of raw material was harvested as saw logs--for use in the manufacture of lumber, timbers, and ties--than for all other timber products combined (tables 7 and 8). The volume used for saw logs accounted for almost 60 percent of the total volume of material used for

all products in 1952. Saw logs obtained from the cutting of live trees made up 86 percent of the total saw log production, with the remaining volume coming mainly from dead trees. A little more than one-half of 1 percent came from cull trees and mill residue such as peeler cores from veneer plants.

Historically the lumber industry has been the dominant forest industry in the region (fig. 2). In the Douglas-fir subregion, the consumption of saw logs from sawtimber trees increased from an annual average of 6.8 billion board-feet in 1930[8/] to 7.7 billion board-feet in 1952. At the same time, the proportion that saw logs were of the total products decreased from 86 percent in 1930 to 74 percent in 1952. The growth of other forest industries is shown by the increasing proportion of timber products represented by material other than saw logs.

In the ponderosa pine subregion the lumber industry has consumed a large proportion of the output from live sawtimber trees. Sawlogs made up 86 percent of the total output of timber products in 1930. In 1952, this had increased to 96 percent. Most of this change has been due to a decreased use of sawtimber trees for fuelwood.

The principal species cut for saw logs from live sawtimber trees in 1952 was Douglas-fir in the Douglas-fir subregion (table 10). It made up almost 90 percent of the total saw log production in western Oregon. In western Washington it also was the dominant species, representing 54 percent of the total volume. In this area, however, a substantial portion of the cut came from hemlock, which made up 32 percent of the saw-log volume.

East of the Cascades, in the ponderosa pine subregion, ponderosa pine was the principal species cut for saw logs from live sawtimber trees (table 10). In eastern Oregon, 79 percent of the saw logs cut were pine and the remaining portion of the volume was made up of Douglas-fir and other species, including true firs and larch. In eastern Washington, half of the volume of saw logs produced was pine and the remaining volume was Douglas-fir and other softwoods.

8/ Production statistics for saw logs, shingle logs, veneer logs, and pulp logs for 1930 are averages for the period 1925-33 in the Douglas-fir subregion, and 1925-30 in the ponderosa pine subregion; other products--mainly cordwood and boltwood--are for the year 1930.

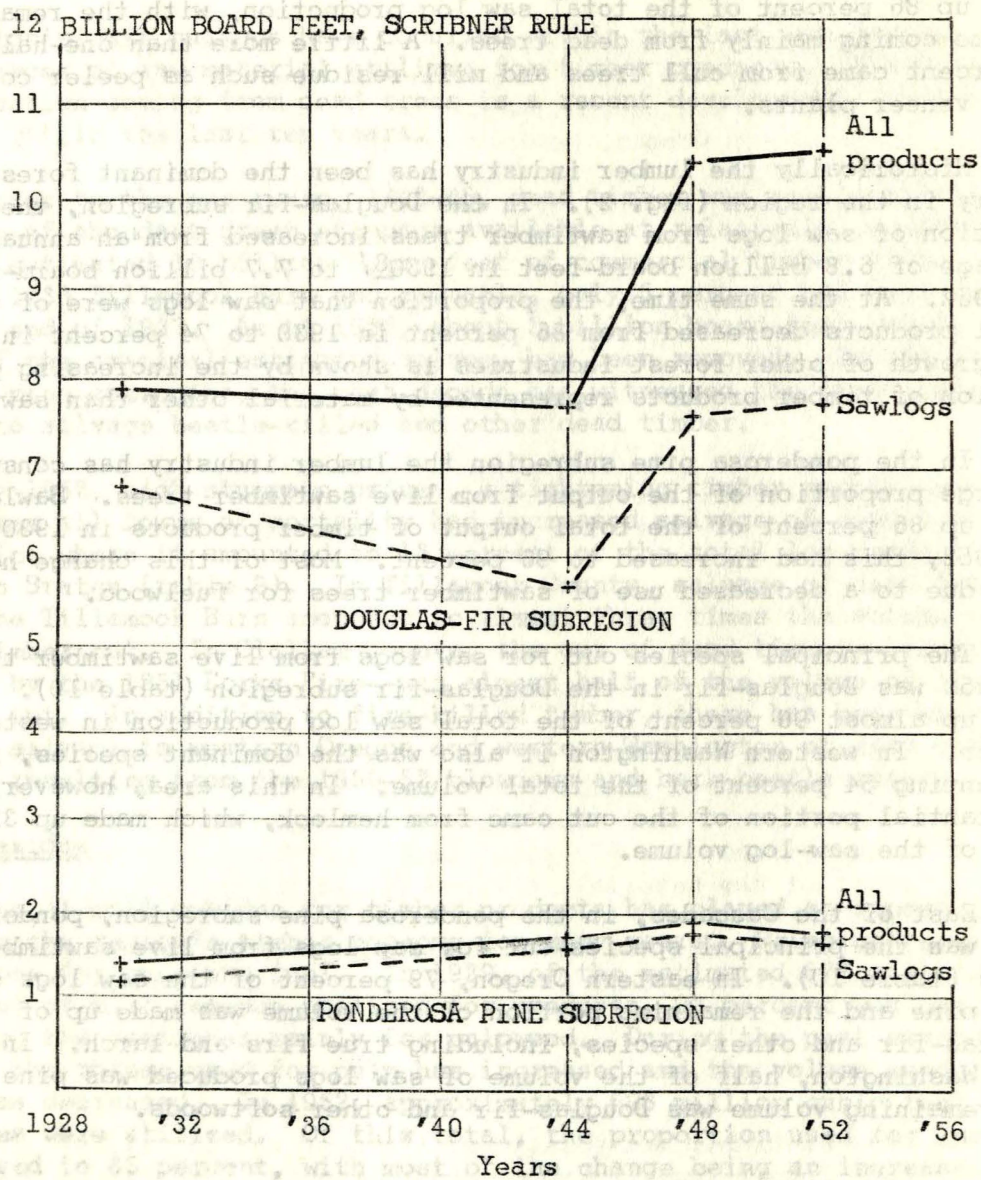


Figure 2.--Sawlog and total product output from live sawtimber in Oregon and Washington 1930 - 1952

Pulpwood

Approximately 11 percent of the total volume of raw material consumed for all timber products in the region in 1952 was used in the production of wood pulp. This volume, amounting to 352 million cubic feet, was exceeded only by the volumes consumed for saw logs and fuelwood (tables 7 and 8).

Sources of raw material for the pulpwood industry have varied throughout the industry's history because of changing economic conditions and technological developments (fig. 3). In its earlier history, the industry utilized a relatively large amount of mill residue with a correspondingly light demand on the commercial forests. A reversal of this trend began in the 1930's and greater proportions of raw material were obtained from the forest inventory. A definite permanent upswing in the use of mill residue seems to have developed in recent years.

The use of mill residue for pulp is closely related to pulping processes as well as logging and sawmill practices. In the 1920's, the sulfite process was the principal method of producing pulp. Desirable species were mainly hemlock, spruce, and true firs. Coincident with the demand for these species for pulp there was a relatively large production of hemlock and--to a more limited extent--spruce lumber. From 1925 to 1930, production of lumber from these two species made up 21 percent of the total output in western Washington. The low cost, relative abundance, and availability of residue from the sawing of these species made their use especially attractive. In 1929 it was estimated that mill residue made up 40 percent of the total consumption of material by the pulpwood industry.

In the years following, the acceptability of hemlock lumber decreased. By 1935, hemlock and spruce together made up less than 8 percent of the total lumber output in western Washington. In 1936, the pulp industry estimated that mill residue made up only 11 percent of the total raw material supply.

Expansion of the sulfate pulping process in the 1940's, making possible the utilization of large volumes of Douglas-fir mill residue, resulted in an increasing use of residue for pulp. Contributing also to this increasing use was a tightening log supply and technological improvements in the form of log barkers and chippers, which made available a greater volume of usable residue. By 1952, some pulp plants were depending almost entirely on residues for raw material and, over the region, 23 percent of the total volume of material consumed in the manufacture of wood pulp came from residue. 9/ Although the volume of

---

9/ Including a small volume utilized in the manufacture of fiberboard.

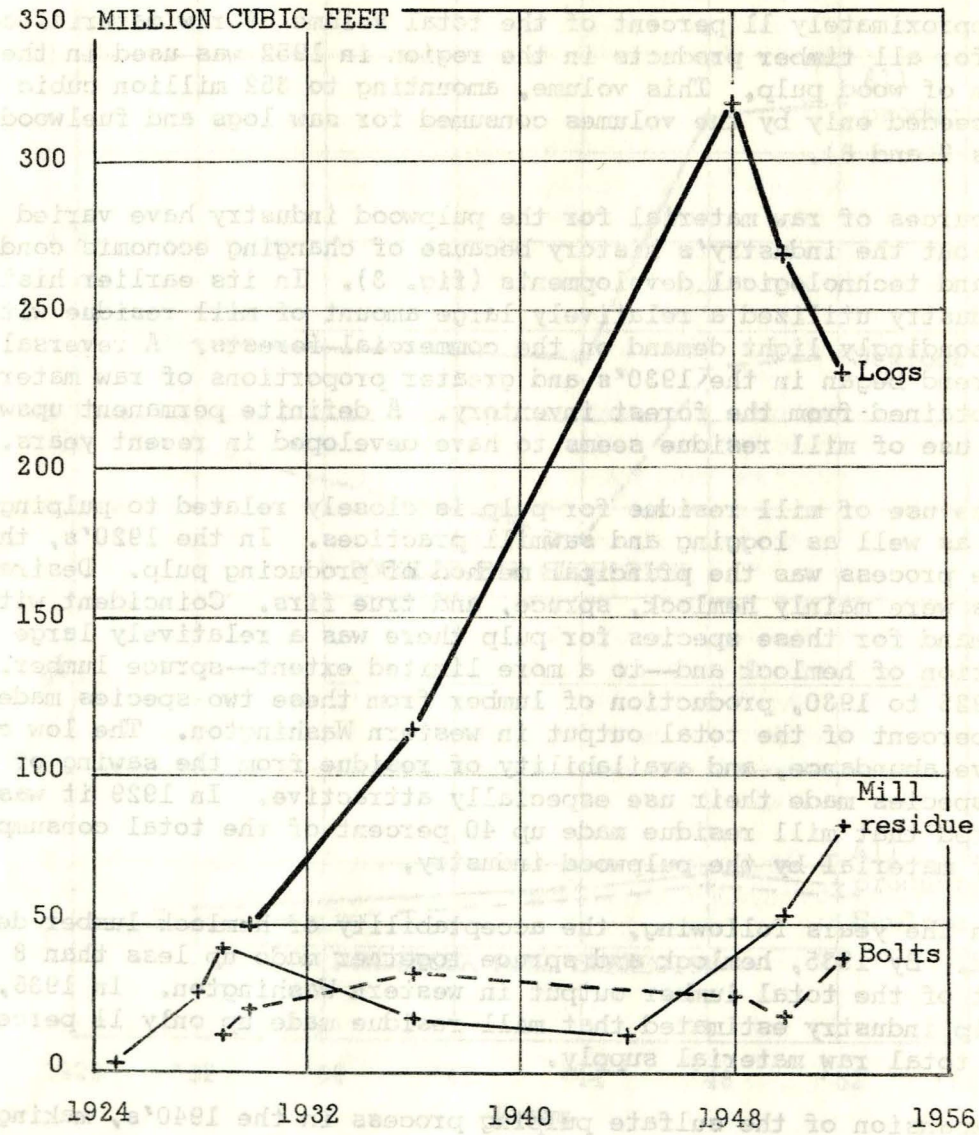


Figure 3.—Sources of raw material for pulpwood in Oregon and Washington 1925 - 1952

mill residue for pulp decreased percentagewise, the actual consumption of residue almost doubled between 1929 and 1952. 10/

Production of pulpwood from live trees is centered in western Washington, where approximately two-thirds of the wood pulp mills in the region are located. In 1952, almost 70 percent of the regional pulpwood production from live trees was obtained in western Washington.

Hemlock made up almost 70 percent of the volume of all species cut for pulp in the region; 22 percent came largely from the true firs; the remaining volume was Douglas-fir and hardwoods (table 10).

Veneer Logs and Bolts

In 1952, veneer logs and bolts accounted for 6 percent, or 203 million cubic feet, of the total timber products output from all raw material sources in Oregon and Washington. Of this total volume, 85 percent was obtained from growing stock. The remaining 15 percent came primarily from dead timber (tables 7 and 8). A large proportion of the dead material came from salvage operations of blowdown and fire-killed timber.

Production of veneer logs and bolts from live sawtimber has been consistently increasing both in volume and in proportion to the total output of timber products. Between 1930 and 1952, the total output of veneer logs and bolts increased over five times. In 1929 the volume of veneer logs and bolts used was estimated at 227 million board-feet. By 1952, this had increased to over a billion board-feet (table 10). In 1929, the volume of veneer logs and bolts was estimated to be about 2 percent of the total production. This figure increased to between 6 and 7 percent in 1948, and by 1952 it exceeded 8 percent.

With the exception of a small volume of logs and bolts cut in the ponderosa pine subregion, practically all veneerwood production in 1952 was in the Douglas-fir subregion. Although plywood production was about equal in western Oregon and western Washington, almost 77 percent of the output of veneer logs and bolts in the Douglas-fir subregion was produced in western Oregon. Oregon's heavier contribution is due mainly to the greater supply of peeler-grade logs in the western part of the State, as compared with Washington.

10/ A study made in 1955 indicates the volume of residue used by the pulp industry has almost doubled since 1952.

A substantial portion of the increased consumption of veneer logs and bolts has been made possible by the ability of the plywood industry to utilize lower quality material. This has been largely due to the expanded production of sheathing-grade plywood, which permits knots and knotholes; and the use of automatic patching equipment, which makes possible the use of lower quality raw material for the better grades of plywood.

Fuelwood

Burning of fuelwood for heat or power generation plays an important part in the region's fuel economy despite inroads made in recent years by alternate types of energy such as oil and hydroelectric power. A substantial amount of fuelwood is still consumed. In 1929, it was estimated that the output of fuelwood was between 770 and 790 million cubic feet. By 1952, the volume had decreased to 653 million cubic feet.

Most of the fuelwood produced in the Northwest comes from mill residue and only a small volume comes directly from forest land. In 1952, 90 percent of the fuelwood output came from mill residue in the form of slabs, trimmings, hogged fuel, and sawdust; 7 percent, from dead and cull trees; and 3 percent, from live trees.

The cutting of live trees for fuelwood has become less important in recent years. In 1930, 162 million cubic feet of fuelwood came from live trees, representing 21 percent of the total output. The volume decreased in 1944 to 30-35 million cubic feet, amounting to less than 6 percent of the total output of fuelwood. By 1952, the output had decreased still further to 18 million cubic feet and represented only 3 percent of the total fuelwood production.

The volume[11/] of mill residue used for fuelwood in 1952 was not substantially less than the volume consumed in 1929. Approximately 626 million cubic feet was used in 1929, while in 1952 the volume consumed was 590 million cubic feet.

Although the decreased use of fuelwood is small in terms of volume, consideration of the expanding industrial economy and the increasing population makes it evident that the relative importance of fuelwood is decreasing. Indicative of this is that for every thousand board-feet of lumber sawn in 1929, 50 cubic feet of sawmill residue was used for fuel while in 1952, the regional average was 41 cubic feet.

11/ Pulp mill residue used for fuel not included in estimates.

The last two decades have seen many changes that have reduced the demand for and use of fuelwood. In urban areas, there has been a marked decrease in its use for home heating and cooking. This is true to a lesser degree in rural areas. Electrification of mills has reduced the industrial demand for fuelwood. Finally, higher economic returns are possible through sale of residue for fiber rather than fuel. Use of wood for fuel will probably continue to decrease as older sawmills and other plants using fuelwood for power generation become obsolete and as the demand for residue for other products continues to increase.

Minor Timber Products

A relatively small volume, amounting to less than 3 percent of the total timber products output, was used for minor timber products (tables 7 and 8). These products include bolts and logs for shingles and cooperage, piling, poles, posts, round mine timbers, and a number of miscellaneous products.

Shingles. Production of shingle logs and bolts in 1952 was almost 43 million cubic feet. This output was largely centered in the Douglas-fir subregion, with western Washington producing 84 percent of the total volume. Almost equal volumes were produced from dead and live trees, with 19 million cubic feet from dead and 21 million cubic feet from live trees. An additional 2 million cubic feet was estimated to have been produced from cull trees.

Other minor products. The output of minor timber products other than shingles amounted to 45 million cubic feet. Although accurate production data are not available, the output of some of these products has probably been decreasing in recent years.

The volume of fence posts produced has decreased as substitute materials have replaced wood posts, as other types of fencing such as single-strand electric fences have reduced the number of posts needed, and as better preservative treatments for woodposts have been developed. The expanding use of metal and fiber drum containers has decreased the demand for logs and bolts for cooperage.

APPENDIX

Statistical Tables

Table 1.—Annual cut, timber products output, and logging residue from growing stock in Oregon and Washington, 1952

(Million cubic feet)

State	Annual cut	Timber products	Logging residue
Pacific Northwest Region	2,390	2,159	231
Oregon:			
Western	1,393	1,266	127
Eastern	215	192	23
Total	1,608	1,458	150
Washington:			
Western	638	573	65
Eastern	144	128	16
Total	782	701	81
Douglas-fir subregion	2,031	1,839	192
Ponderosa pine subregion	359	320	39

Table 2.--Annual cut, timber products output, and logging residue from live sawtimber in Oregon and Washington, 1952

(Million board-feet)

State	Annual Cut		Timber products		Logging residue	
	Scribner rule	International $\frac{1}{4}$-inch rule	Scribner rule	International $\frac{1}{4}$-inch rule	Scribner rule	International $\frac{1}{4}$-inch rule
Pacific Northwest Region	13,231	14,271	12,343	13,313	888	958
Oregon:						
Western	7,953	8,576	7,246	7,813	707	763
Eastern	1,142	1,233	1,082	1,168	60	65
Total	9,095	9,809	8,328	8,981	767	828
Washington:						
Western	3,380	3,645	3,299	3,558	81	87
Eastern	756	817	716	774	40	43
Total	4,136	4,462	4,015	4,332	121	130
Douglas-fir subregion	11,333	12,221	10,545	11,371	788	850
Ponderosa pine subregion	1,898	2,050	1,798	1,942	100	108

Table 3.--Annual cut of live sawtimber in Oregon by county, 1952

(Million board-feet)

County	Scribner rule	International ¼-inch rule
Western Oregon:		
Benton	187	202
Clackamas	439	474
Clatsop	144	155
Columbia	53	57
Coos	602	649
Curry	610	657
Douglas	1,652	1,781
Hood River	52	56
Jackson	607	655
Josephine	334	360
Lane	1,355	1,461
Lincoln	564	608
Linn	534	576
Marion	128	138
Multnomah	22	24
Polk	222	240
Tillamook	179	193
Washington	138	149
Yamhill	131	141
Total	7,953	8,576
Eastern Oregon:		
Baker	39	42
Crook	65	71
Deschutes	52	56
Grant	227	245
Harney	30	33
Jefferson	76	82
Klamath	204	220
Lake	119	129
Malheur	1/	1/
Morrow	12	12
Umatilla	42	45
Union	51	55
Wallowa	57	61
Wasco	105	114
Wheeler	63	68
Total	1,142	1,233
Total Oregon	9,095	9,809

1/ Less than one-half million board-feet.

Table 4.--Annual cut of live sawtimber in Washington by county, 1952

(Million board-feet)

County	Scribner rule	International ¼-inch rule
Western Washington:		
Clallam	184	198
Clark	24	26
Cowlitz	284	306
Grays Harbor	407	439
Island	24	26
Jefferson	178	192
King	246	265
Kitsap	55	59
Lewis	537	579
Mason	93	100
Pacific	207	224
Pierce	231	249
San Juan	18	20
Skagit	157	169
Skamania	178	192
Snohomish	207	224
Thurston	125	135
Wahkiakum	77	83
Whatcom	148	159
Total	3,380	3,645
Eastern Washington:		
Asotin	7	8
Chelan	44	47
Columbia	2	3
Ferry	106	115
Garfield	6	6
Kittitas	86	93
Klickitat	150	162
Lincoln	6	6
Okanogan	107	116
Pend Oreille	37	40
Spokane	19	20
Stevens	84	90
Walla Walla	1/	1/
Whitman	1/	1/
Yakima	102	111
Total	756	817
Total Washington	4,136	4,462

1/ Less than one-half million board-feet.

Table 5.--Annual cut of live sawtimber in Oregon and Washington, by species, 1952

(Million board-feet, Scribner rule)

Area	Total	Ponderosa pine	Sugar and white pine	Douglas-fir	Hemlock	Other softwoods	Hardwoods
Pacific Northwest Region	13,231	1,388	59	8,528	2,030	1,178	48
Oregon:							
Western	7,953	139	15	6,828	607	348	16
Eastern	1,142	896	6	103		137	
Total	9,095	1,035	21	6,931	607	485	16
Washington:							
Western	3,380		6	1,361	1,404	577	32
Eastern	756	353	32	236	19	116	
Total	4,136	353	38	1,597	1,423	693	32
Douglas-fir subregion	11,333	139	21	8,189	2,011	925	48
Ponderosa pine subregion	1,898	1,249	38	339	19	253	

Table 6.--Consumption of raw material for timber products in Oregon and Washington, by source, 1952

(Million cubic feet)

Area 1/	Raw material sources				
	Total	Growing stock	Dead trees	Mill residue 2/	Cull and trees from noncommercial forest land
Pacific Northwest Region	3,224	2,160	339	693	32
Oregon:					
Western	1,898	1,266	268	347	17
Eastern	281	192	12	75	2
Total	2,179	1,458	280	422	19
Washington:					
Western	871	573	52	236	10
Eastern	174	129	7	35	3
Total	1,045	702	59	271	13
Douglas-fir subregion	2,769	1,839	320	583	27
Ponderosa pine subregion	455	321	19	110	5

1/ Where the growing stock, dead trees, mill residue, cull and other trees originated and not necessarily where they were processed into lumber, pulp, veneer, etc.

2/ Does not include residue utilized from pulp mills, but does include material left over and utilized for fuel, chipped for pulp, or used for other purposes after converting logs and bolts to primary products such as lumber, veneer, and cooperage. Consists of coarse residue as slabs, edgings, trimmings, and veneer cores, and fine residue as sawdust and shavings.

Table 7.--Consumption of raw material for timber products in Oregon, by source and product, 1952

(Thousand cubic feet)

Timber products	Raw material sources				
	Total	Growing stock	Dead trees	Mill residue	Cull and trees from noncommercial forest land
Total	2,178,684	1,457,964	279,361	422,027	19,332
Sawlogs	1,465,476	1,220,798	235,510	3,301	5,867
Veneer logs and bolts	156,384	132,438	23,174		772
Cooperage logs and bolts	2,231	1,674	334		223
Shingle logs and bolts	6,664	3,332	2,999		333
Pulpwood logs and residue	106,746	69,996	4,898	31,852	
Pulpwood bolts	6,652	6,475	177		
Fuelwood	406,583	9,119	11,467	374,084	11,913
Piling	2,964	2,964			
Poles	7,941	7,941			
Posts	2,701	1,726	751		224
Round mine timbers	15	6		9	
Miscellaneous	14,327	1,495	51	12,781	

Table 8.--Consumption of raw material for timber products in Washington, by source and product, 1952

(Thousand cubic feet)

Timber products	Raw material sources				
	Total	Growing stock	Dead trees	Mill residue	Cull and trees from noncommercial forest land
Total	1,044,632	701,399	58,971	271,095	13,167
Sawlogs	461,681	438,948	19,330	1,321	2,082
Veneer logs and bolts	46,712	40,905	5,575		232
Cooperage logs and bolts					
Shingle logs and bolts	36,056	18,028	16,225		1,803
Pulpwood logs and residue	206,611	151,873	4,280	50,458	
Pulpwood bolts	32,149	31,843	306		
Fuelwood	246,158	8,988	12,387	215,794	8,989
Piling	1,270	1,270			
Poles	4,190	4,190			
Posts	2,280	1,421	798		61
Round mine timbers	578	570	8		
Miscellaneous	6,947	3,363	62	3,522	

Table 9.--Log production from live and dead trees in Oregon and Washington, by county, 1952

(Thousand board-feet, Scribner rule)

State and county	Log production			State and county	Log production		
	Live	Dead	Total		Live	Dead	Total
Western Oregon:				Western Washington:			
Benton	168,901	15,653	184,554	Clallam	181,044	88,126	269,170
Clackamas	397,244	8,946	406,190	Clark	24,334	1,935	26,269
Clatsop	129,647	43,218	172,865	Cowlitz	278,877	6,971	285,848
Columbia	48,096	3,070	51,166	Grays Harbor	399,768	23,865	423,633
Coos	544,214	199,396	743,610	Island	23,516	978	24,494
Curry	551,193	88,879	640,072	Jefferson	175,306	1,621	176,927
Douglas	1,493,402	126,353	1,619,755	King	241,772	3,486	245,258
Hood River	47,421	3,064	50,485	Kitsap	54,221	5,313	59,534
Jackson	548,749	16,847	565,596	Lewis	528,291	58,269	586,560
Josephine	301,631	16,721	318,352	Mason	90,757	8,434	99,191
Lane	1,224,671	317,395	1,542,066	Pacific	203,772	2,873	206,645
Lincoln	509,793	40,548	550,341	Pierce	227,387	5,924	233,311
Linn	482,853	109,453	592,306	San Juan	17,586		17,586
Marion	115,654	7,785	123,439	Skagit	153,757	3,683	157,440
Multnomah	19,603	701	20,304	Skamania	174,991	25,599	200,590
Polk	200,592	15,692	216,284	Snohomish	203,571	15,923	219,494
Tillamook	162,359	447,265	609,624	Thurston	122,633	1,523	124,156
Washington	124,502	8,104	132,606	Wahkiakum	76,291	520	76,811
Yamhill	118,010	7,227	125,237	Whatcom	145,111	4,915	150,026
Total	7,188,535	1,476,317	8,664,852	Total	3,322,985	259,958	3,582,943
Eastern Oregon:				Eastern Washington:			
Baker	36,819	1,141	37,960	Asotin	6,301		6,301
Crook	62,183	5,379	67,562	Chelan	37,258	1,112	38,370
Deschutes	48,930	9,132	58,062	Columbia	1,721		1,721
Gilliam				Ferry	89,711	47	89,758
Grant	215,144	17,463	232,607	Garfield	5,314		5,314
Harney	28,690	1,290	29,980	Kittitas	73,332	810	74,142
Jefferson	71,943	5,899	77,842	Klickitat	127,495	1,247	128,742
Klamath	192,775	4,566	197,341	Lincoln	5,301		5,301
Lake	112,838	3,262	116,100	Okanogan	91,464	1,353	92,817
Malheur				Pend Oreille	30,525	305	30,830
Morrow	11,140	80	11,220	Spokane	15,610	163	15,773
Sherman				Stevens	71,049	19	71,068
Umatilla	40,418	115	40,533	Yakima	87,314	2,571	89,885
Union	47,842	706	48,548				
Wallowa	54,071	732	54,803				
Wasco	100,051	3,489	103,540				
Wheeler	60,323	1,058	61,381				
Total	1,083,167	54,312	1,137,479	Total	642,395	7,627	650,022
Total	8,271,702	1,530,629	9,802,331	Total	3,965,380	267,585	4,232,965

Table 10.--Timber products from live sawtimber in the Douglas-fir and ponderosa pine subregions, by species, 1952

(Thousand board-feet)

Timber products by subregion	Total		Ponderosa pine	Sugar and white pine	Douglas-fir	Hemlock	Other softwoods	Hardwoods
Douglas-fir subregion	International ¼-inch rule	Scribner rule (log scale)						
Total	11,370,748	10,544,057	126,214	19,506	7,548,951	1,923,648	880,422	45,316
Saw logs	8,322,040	7,705,593	121,118	19,506	6,274,636	862,156	411,823	16,354
Veneer logs and bolts	1,088,843	1,027,211	2,862		1,019,471	2,439	2,439	
Cooperage logs and bolts	10,644	10,042			10,042			
Shingle logs and bolts	137,133	128,162					128,162	
Pulpwood logs	1,407,377	1,303,127			45,038	931,870	305,416	20,803
Pulpwood bolts	212,850	197,084			53,799	127,183	11,848	4,254
Fuelwood	86,791	80,362	2,234		68,023		6,737	3,368
Piling	27,271	23,923			23,923			
Poles	61,070	53,104			47,669		5,435	
Posts	5,761	5,335			1,037		4,104	194
Round mine timbers	857	752			752			
Miscellaneous	10,111	9,362			4,561		4,458	343
Ponderosa pine subregion								
Total	1,942,519	1,798,308	1,182,895	35,572	320,756	18,247	240,713	125
Saw logs	1,855,219	1,717,794	1,162,165	35,572	309,553	6,335	204,169	
Veneer logs and bolts	13,616	12,845	11,345		1,500			
Cooperage logs and bolts								
Shingle logs and bolts								
Pulpwood logs	30,334	28,087			6,273	11,912	9,777	125
Pulpwood bolts	5,605	5,190					5,190	
Fuelwood	16,085	14,894	7,967		3,345		3,582	
Piling								
Poles	8,005	6,961					6,961	
Posts	11,092	10,271	1,316				8,955	
Round mine timbers	2,202	1,932					1,932	
Miscellaneous	361	334	102		85		147	

Procedures Used

Field and office work required in the compilation of the data used in this report was done in 1953. Earlier statistics used for comparisons and establishment of trends were obtained from publications and reports available in the files of the Pacific Northwest Forest and Range Experiment Station.

Log Production

The starting point for determination of total volumes of material—both as timber products and for the annual cut--was the log production statistics compiled annually by the State Foresters of Oregon and Washington. These log production statistics account for the great majority of all products produced in the two States. In Washington, they account for all products removed from the forests. In Oregon they include all products except poles, piling, and fuelwood. The method of obtaining volumes for these three products is described on page 26.

Special studies were made by State Foresters, Indian Service, and the U. S. Forest Service, to determine volumes by log sources—whether from live or dead trees. Empirical estimates by experiment station personnel provided the additional breakdown of log production by cull trees and trees from noncommercial forest land.

Mill Residues

The volume of mill residues developed in primary manufacturing and used for timber products was obtained from a combination of existing data and special studies. Mill residues are developed mainly in the manufacture of lumber, veneer, plywood, and shingles. Since the majority of residues are developed from these sources, investigation was limited to these three products.

For the State of Washington, the Institute of Forest Products of the Department of Conservation and Development provided most of the data for residue from all products except shingles. Surveys made in 1948 and 1949 and adjusted on the basis of further work in 1952 provided the basic information. These data were modified to meet experiment station definitions.

In Oregon, a special study was made of sawmills, veneer plants, and shingle mills for information on volumes and types of mill residue. A special study of shingle mills was also made in Washington. Sampling was conducted separately for west and east sides of the two States. Sampling intensity was as follows:

Sawmills

(Oregon)

Mill size class (8-hr. cap.)	Total lumber output (MM bd.-ft.)	Sample output (MM bd.-ft.)	Sample output (Percent)	Mills sampled (Number)
Western Oregon:				
120 M +	3,378	721	21	14
80 - 119 M	1,028	50	5	2
40 - 79 M	1,689	73	4	7
39 M -	1,248	10	1	5
Eastern Oregon:				
51 M +	1,305	350	27	6
31 - 50 M	135	36	27	2
1 - 30 M	60	10	16	2

Veneer Plants

(Oregon)

Total log consumption (MM bd.-ft.)	Sample consumption (MM bd.-ft.)	Mills sampled (Number)
614	97	5

Shingle Mills

(Western Oregon and Western Washington)

Total lumber production (M bd.ft.)	Production sample (M bd.-ft.)	Mills sampled (Number)
256	11	3

Data on mill residues obtained from these samples were classified according to type of use--fuel, fiber, and other. In addition, classification of residue by size was made--coarse and fine. Factors were developed for each of these breakdowns and were applied to the total production in order to obtain volume figures for residue developed, by use and size.

Timber Products

Once the total volume of live, dead, and cull trees; trees from noncommercial forest land; and mill residues, was determined (with the exception of poles, piling, and fuelwood in Oregon) distribution of this raw-material volume was made by product.

In general, the procedure consisted of obtaining statistics of production for each product and adjusting the individual items to log scale by means of appropriate conversion factors. Adjustment was made for imports and exports in order to determine more exactly the output of products from Oregon and Washington. The following source data were used as a basis for determining output by products:

Sawlogs - Lumber production compiled by the Bureau of the Census, the West Coast Lumbermen's Association, and the Western Pine Association.

Veneer logs and bolts - Bureau of the Census statistics on softwood plywood veneer production. An additional volume was included for green veneer plants, which the Census did not report for 1952.

Cooperage logs and bolts - Based on a 100-percent canvass.

Shingles - Bureau of the Census statistics.

Fuelwood - Based on statistics derived from the study of volume and disposition of mill residues. Supplemented by empirical estimates of wood consumed for home use based on Bureau of the Census data on household characteristics.

Pulpwood - Based on a 100-percent canvass.

Piling, poles, posts - Empirical estimates.

Round mine timbers - Based on conversion factors developed from a previous sampling survey of mine timber consumption relating tonnage of ore produced to mine timbers used.

Other - Based on sample of mill residues and empirical estimates.

The types of raw material--live, dead, cull, and trees from noncommercial forest land--consumed for each timber products were obtained by empirical estimates.

Annual Cut

Annual cut statistics were developed through application of a factor that related production of logs from live sound trees on commercial forest land to the volume of logging residual developed in the logging operation. This factor was developed in 1952. Logging residual factors for Washington were based on a sampling survey by the Washington Institute of Forest Products in 1949 and 1950. Through

analysis and field checks, the Institute's data were adjusted to the 1952 intensity of utilization and Forest Survey specifications and standards.

The eastern Washington survey results were used for eastern Oregon after field checking determined no significant differences were present. In western Oregon, a survey was conducted as a cooperative field sampling project by the experiment station and the Oregon Forest Products Laboratory. Data were collected on 106 samples distributed throughout the 19 counties. Factors developed from these data, applied to the volume of live timber removed from the commercial forest land and added to that volume, gave the total volume of timber removed from the forest inventory by logging.

Glossary

Annual Cut of Growing Stock

The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Timber products from growing stock. The volume of timber products cut from growing stock.

Logging residues from growing stock. The volume of growing stock cut or killed by logging on commercial forest land and not converted to timber products.

Annual Cut of Live Sawtimber

The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Timber products from live sawtimber. The volume of timber products cut from live sawtimber.

Logging residues from live sawtimber. The volume of live sawtimber trees cut or killed by logging on commercial forest land and not converted to timber products.

Bolt

A segment sawn or split from a log and used in the output of products such as pulp, veneer, shingles.

Commercial Forest Land Area

Forest land which is producing, or is physically capable of producing, usable crops of wood, economically available now or prospectively, and not withdrawn from timber utilization.

Cull Tree

Live tree of sawtimber or poletimber size that is unmerchantable, now or prospectively, because of defect, rot, or species.

Sound cull tree. Live tree of sawtimber or poletimber size which contains 25 percent or more of sound volume but will not make at least one merchantable log, now or prospectively, because of roughness or poor form.

Rotten cull tree. Live tree of sawtimber or poletimber size in which less than 25 percent of the total volume is sound.

Growing Stock

Net volume in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

Live Sawtimber Volume

Net volume in board feet of live sawtimber trees of commercial species.

Scribner rule. The common board-foot rule used in determining log-scale volume of sawtimber in the Pacific Northwest.

International $\frac{1}{4}$-inch rule. The standard board-foot rule adopted nationally by the Forest Service in the presentation of Forest Survey volume statistics.

Noncommercial Forest Land Area

Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Poletimber Tree

Tree of commercial species, 5.0 to 10.9 inches d.b.h., to a minimum top diameter inside bark of 4 inches. Also, 25 percent or more of the gross cubic-foot volume must be free from rot and other defect.

Salvable Dead Tree

Standing dead or down tree that contains 25 percent or more of sound volume and at least one merchantable 16-foot coniferous or 8-foot hardwood log.

Sawtimber Tree

Tree of commercial species, 11 inches d.b.h. and larger, that contains at least one 16-foot coniferous saw log or one 8-foot hardwood saw log, to a variable top diameter never less than 8 inches inside the bark. Also, 25 percent or more of the gross board-foot volume must be free from rot and other defect.